

CLAIMS

1. An electric drive unit for generating an oscillating movement that comprises a stator (13), a rotor (14), a torsion element (10) and a tuning element (6) that acts upon the torsion element (10) and serves for mechanically tuning the resonant frequency of the drive unit (1), **characterized in** that the rotor (14) features a hollow shaft (3), and in that the torsion element (10) is at least partially arranged within the hollow shaft (3).
2. The drive unit according to claim 1, **characterized in** that the tuning element (6) fixes the torsion element (10) at a variable location of the torsion element (10).
3. The drive unit according to one of the preceding claims, **characterized in** that the tuning element (6) is arranged on the stator (13) such that it can be displaced and fixed in position.
4. The drive unit according to claim 3, **characterized in** that the tuning element (6) is displaceable parallel to the longitudinal axis of the drive unit (1).
5. The drive unit according to claim 3 or 4, **characterized in** that the tuning element (6) engages into at least one groove (19) in the stator (13).
6. The drive unit according to one of the preceding claims, **characterized in** that the tuning element (6) is realized in the form of a clamping device.

7. The drive unit according to claim 6, **characterized in** that the tuning element comprises two parts (17, 18) and at least one connecting element (20) for pulling together the two parts (17, 18).
8. The drive unit according to one of the preceding claims, **characterized in** that the torsion element (10) is fixed on the rotor (14).
9. The drive unit according to one of the preceding claims, **characterized in** that the torsion element (10) is realized in the form of a torsion rod.
10. The drive unit according to one of the preceding claims, **characterized in** that a housing (2) is provided that features a recess (5) in the region of the tuning element (6).
11. The drive unit according to one of the preceding claims, **characterized in** that the stator (13) features permanent magnets (12) and at least one coil (16).
12. The drive unit according to one of the preceding claims, **characterized in** that the rotor (14) features an armature (9) of a magnetizable material.
13. A small electric appliance, **characterized in** that it features a drive unit (1) according to one of the preceding claims.
14. The small appliance according to claim 13, **characterized in** that it is realized in the form of an electric toothbrush or in the form of an electric razor.

15. A method for manufacturing an electric drive unit (1) for generating an oscillating movement, wherein the drive unit (1) comprises a stator (13), a rotor (14), a torsion element (10) and a tuning element (6), and wherein the resonant frequency of the drive unit (1) is mechanically tuned, **characterized in** that the drive unit (1) is excited such that it carries out an oscillating movement, and in that the location of the torsion element (10) at which the tuning element (6) needs to be fixed is determined from the oscillating movement.
16. The method according to claim 15, **characterized in** that the torsion element (10) is fixed on the tuning element (6), wherein the location at which the tuning element (6) engages on the torsion element (10) is chosen such that the drive unit (1) has the desired resonant frequency.
17. The method according to claim 16, **characterized in** that the drive unit (1) carries out the oscillating movement due to an excitation by pulses.
18. The method according to one of claims 15-17, **characterized in** that the torsion element (10) is fixed in the rotational position that the rotor (14) assumes when the drive unit (1) is switched off.